

REMARKS

Reconsideration and allowance are respectfully requested.

35 U.S.C. 103 – Nonobviousness

A claimed invention is unpatentable if the differences between it and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art. *In re Kahn*, 78 USPQ2d 1329, 1334 (Fed. Cir. 2006) citing *Graham v. John Deere*, 148 USPQ 459 (1966). The *Graham* analysis needs to be made explicitly. *KSR v. Teleflex*, 82 USPQ2d 1385, 1396 (2007). It requires findings of fact and a rational basis for combining the prior art disclosures to produce the claimed invention. See *id.* (“Often, it will be necessary for a court to look to interrelated teachings of multiple patents . . . and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue”). The use of hindsight reasoning is impermissible. See *id.* at 1397 (“A factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon ex post reasoning”). Thus, a *prima facie* case under Section 103(a) requires “some rationale, articulation, or reasoned basis to explain why the conclusion of obviousness is correct.” *Kahn* at 1335; see *KSR* at 1396.

Claims 1-10 and 13-20 stand rejected under 35 U.S.C. 103 as being unpatentable over Schneider (Schneider et al., Applied Catalysis A: General 220 (2001) 51-58) in view of Itoh (Itoh et al. U.S. Application 2005/0176994). Applicants traverse.

The claimed invention is directed to a process for the manufacture 2,3,5-trimethylhydroquinone dialkanoate comprising reacting ketoisophorone with an acylating agent in the presence of an indium(III) salt as a catalyst. The claimed invention is not obvious in view of the cited references for at least for following reasons.

First, there is no reason to combine Schneider and Itoh to derive Applicants' claimed invention. Schneider is not directed to a Friedel-Crafts reaction while Itoh is directed to a Friedel-Crafts reaction. As the Examiner has acknowledged on the first

sentence of page 3 of the Office Action, Schneider's reaction is not a Friedel-Crafts reaction. In contrast, Itoh refers to the use of indium chloride as a catalyst for Friedel-Crafts reactions. Since Schneider does not relate to Friedel-Crafts reactions and Itoh discusses the use of catalyst in a Friedel-Crafts reaction, there is simply no motivation to combine these two references directed to different subjects.

Second, there is no reason to combine Schneider and Itoh because they refer to different catalyst. In addition to the above, Schneider refers to Nafion/metal oxide composites and Nafion/silica-composites for Friedel-Crafts reactions. In contrast Applicants' claimed invention is directed to indium(III) salt which are neither Nafion/metal oxide composites nor Nafion/silica-composites. In addition, Itoh is silent as to an equivalent to Nafion/metal oxide composites or Nafion/silica composites. Thus, even if Schneider and Itoh were combinable (a position Applicants disagree with), there is no reason to combine the two references because Itoh has not shown an equivalent to Schneider's Nafion/metal oxide composites or Nafion/silica-composites. Further, a combination of the two references would not lead to the use of indium(III) salts or Applicants' claimed invention because Schneider discusses Nafion/metal oxide composites or Nafion/silica-composites and no equivalent to Nafion/metal oxide composites or Nafion/silica-composites is disclosed in Itoh. Since Itoh has not shown an equivalent to Schneider's composites, there is no expectation that a combination of Schneider and Itoh would work. Furthermore, Schneider refers to a Nafion/metal oxide or Nafion/silica-composites. Even if the Nafion/metal-oxide composites or Nafion/silica-composites were replaced by an equivalent (a teaching not shown in Itoh) it would still not lead to Applicants' claimed invention because the claimed invention does not use a Nafion/metal-oxide composite or Nafion/silica-composite. Therefore, in addition to not having a motivation to combine, there is no expectation of success even if the two references were combined. Finally, a combination of Schneider and Itoh, at best, would lead to a Friedel-Crafts reaction, and, as the Examiner admitted on page 3, first sentence, the claimed invention is not a Friedel-Crafts reaction. Thus, a combination of the references would not lead to the claimed invention

Third, since Friedel-Crafts acylation differ from the claimed reactions, it is our opinion that one cannot predict that if a catalyst works for one reaction, it is suitable for the other reaction. Even if, for the sake of argument, that there is one catalyst that works for both reaction, it does not automatically mean that every catalyst that is suitable for one reaction is also suitable for the other reaction. Schneider refers to the use of Nafion, a perfluorinated sulphonic acid ion-exchange polymer, for rearrangement-aromatization reactions. Schneider is silent about indium salts. Schneider only disclosed that a composite, i.e., a Nafion/metal oxide composite, is suitable for Friedel-Crafts acylations. It is not disclosed that Nafion itself is suitable for Friedel-Crafts acylations. The catalysts described in Schneider are different from the ones of the claimed invention. Itoh deals with Friedel-Crafts acylations. One of skill in the art would have no reason to combine the two references since each reference deals with a different reaction type.

Furthermore, Itoh refers to indium chloride as suitable catalyst for their Friedel-Crafts reactions. Indium chloride is named as one catalyst among 28 (the ionic liquids are only counted once), and it is not preferred (See, Itoh, paragraph [0041] and examples 5-15). Aside from examples 5-15, all the 58 other examples (examples 71-75) were not counted since they deal with a different reaction type) used aluminum chloride. In addition, Itoh is silent about rearrangement reactions. Thus, a person of skill in the art would not derive the claimed invention even if Schneider and Itoh were combined.

Therefore, the combination of Schneider and Itoh does not render obvious Applicants' invention as represented by independent claim 1. Moreover, claims depending from independent claim 1 are also not rendered obvious by the cited documents because all limitations of the independent claim are incorporated in its dependent claims. M.P.E.P. § 2143.03 citing *In re Fine*, 5 USPQ2d 1596 (Fed. Cir. 1988).

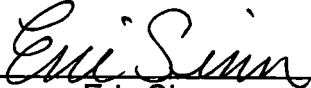
Withdrawal of the Section 103 rejections is requested because the claims would not have been obvious to one of ordinary skill in the art when this invention was made.

Conclusion

Having fully responded to the pending Office Action, Applicants submit that the claims are in condition for allowance and earnestly solicit an early Notice to that effect. The Examiner is invited to contact the undersigned if additional information is required.

Respectfully submitted,

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